

REMARKS

Claims 1, 2, 4 to 6, 9 to 10, 13 to 20, 23 to 30 and 33 to 34 are pending.

Claims 1, 2, 4 to 6, 9 to 10, 13 to 20 and 23 to 24 claim a method “comprising positively displacing a first luminescence material precursor from a dispenser” “within a linear dynamic range of from greater than 20 nano-liter to about 100 micro-liter.” and claims 25 to 26 claim a method comprising “dispensing said precursor into a well of an array plate by a positive displacement action of said plunger against [a] precursor” to displace a precursor “within a linear dynamic range of from greater than 20 nano-liter to about 100 micro-liter.” Claims 27 to 30 and 33 to 34 claim an assembly comprising “a battery of positive displacement driven dispensers” with “a capability of displacing viscous material of greater than 1 centipoise within a linear dynamic range of greater than 20 nano-liter to about 100 micro-liter.

Claims 1 to 2, 4 to 6, 8 to 20, 23 to 30 and 32 to 34 were rejected under 35 U.S.C. §103(a) over Xiang et al., Schultz et al. and Salomaa et al. and claims 1 to 2, 4 to 6, 8 to 20, 23 to 30 and 32 to 34 were rejected under 35 U.S.C. §103(a) over Xiang et al., Schultz et al., Jorgensen and Stahl.

Applicant has argued that the rejections are based on improper combinations of references and that even improperly combined, the references do not establish a prima facie case of obviousness.. The April 10, 2003 Final Rejection fails to properly address these arguments. Applicant specifically requests the PTO to withdraw the Final Rejection and to allow the claims or to specifically address Applicant’s improper combinations of references and no prima facie case of obviousness arguments in a non-final office action, restarting the period for response. Applicant’s positions on these issues and on the failure of the PTO to respond are set out as follows:

I. IMPROPER COMBINATION OF REFERENCES

The rejections of Claims 1 to 2, 4 to 6, 8 to 20, 23 to 30 and 32 to 34 under 35 U.S.C. §103(a) over Xiang et al., Schultz et al. and Salomaa et al. and claims 1 to 2, 4 to 6, 8 to 20, 23 to 30 and 32 to 34 under 35 U.S.C. §103(a) over Xiang et al., Schultz et al.,

Jorgensen and Stahlhli are based on improper combinations of references.

To establish a prima facie case of obviousness based on a combination of references, the PTO must provide an:

...objective teaching... [that] would lead [one skilled in the art] to combine the relevant teachings of the references." *In re Fritch*, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992)

... "When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. See, e.g., McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001) ("the central question is whether there is reason to combine [the] references," a question of fact drawing on the Graham factors)."

....

... The Board [PTO] must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious."); *In re Fritch*, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992) (the examiner can satisfy the burden of showing obviousness of the combination "only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references").

In re Lee, 277 F.3d 1338, _____, 61 USPQ 2d 1430, 1433-1434 (Fed. Cir. 2002).

The PTO must provide "logical and rational" reasoning to support its determination (to reject on combined references). *In re Lee*, supra 277 F.3d at _____, 61 USPQ 2d at 1432-1433. The PTO has not provided the "logical and rational" reasoning to combine references and the rejections must be withdrawn in accordance with applicable law.

While not clear from the Final Rejection, Applicants believe that the PTO has attempted to meet its *In re Lee* "'logical and rational'" reasoning to combine" obligation at page 7, Section 5.

First, the Final Rejection states:

Applicant's arguments filed February 20, 2003 have been fully considered but they are not persuasive.

Final Rejection Section 5, page 7.

However, it is not Applicant's burden in the first instance to "persuade" that the combination is improper. It is the PTO's burden to establish that the combination is proper. *See In re Lee, supra*. This has not been done in this case.

Further, the Final Rejection states:

Relative to the rejection of the claims based on the combination including the Salomaa reference examiner has shown in the explanations above of the Xiang and Salomaa references where the formation of mixtures is taught.

Final Rejection Section 5, page 7.

This passage fails to indicate where the purported "formation of mixtures" is taught in the references. This is improper examination. *See In re Rijckaert*, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

Furthermore and more important, the "formation of mixtures" is not the "logical and rational" reasoning to combine" required by *In re Lee*. The invention does not relate to "formation of mixtures." The invention relates to "displacing luminescent precursors... to positions on an array" (independent claim 1), to a CHTS method comprising "aspirating a candidate luminescence material precursor and dispensing the precursor into a well of an array place" (independent claim 25) and to a CHTS assembly for "dispensing luminescence materials" (independent claim 27)."

Further, the Final Rejection states:

For a clear understanding of the examiner's position, a mixture includes dilutions because it is a mixture of two different liquids. In fact the Xiang reference is creating a series of dilutions as the volumes of the different liquids are varied to form the different compositions. Relative to the combinations of references applicant appears to be completely ignoring the teachings of the Schultz reference which clearly teaches combinatorial

synthesis using several types of liquid dispensers in volumes as low as 5 nanoliters.

Final Rejection Section 5, page 7.

Applicant appreciates the PTO's discussion of a mixture but fails to understand how this discussion provides the *In re Lee* "'logical and rational' reasoning to combine" mixture teachings with "displacing luminescent precursor" method and apparatus teachings. Applicant's specification points out the problem with conventional methods and systems:

However, a multi-jet delivery system cannot handle viscose solutions or gels, gels or solid suspensions that are the necessary precursors of phosphor materials. Materials of a viscosity greater than about 1 centipoise tend to clog the orifices of multi-jet type systems. Some of the precursors are so viscous that they cannot be delivered through the ink-jet nozzle. Additionally, known multi-jet systems are designed for discovery processing of relatively benign materials. Many of the phosphor library precursors must be delivered as highly acidic solutions. The viscous solutions cannot be delivered through the orifices of the multi-jet type systems and the deleterious acidic phosphor solutions cause deterioration of known multi-jet delivery system structures.

Specification page 2, line 23 to page 3, line 3.

Salomaa et. al (and for that matter, Jorgensen and Stahli) have no relevance to luminescent material dispensing or in the art of CHTS luminescent material dispensing and no relevance to solving the problem of dispensing high viscosity luminescent precursors. 1 Why would one skilled in the art of luminescent material dispensing or in the art of CHTS luminescent material dispensing have been led to combine a teaching of a device or method for forming mixtures or for serial dilution? See MPEP. 2141.01(a) and *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). The PTO has failed to answer this *In re Lee* questions and the combination of references should be withdrawn.

1 The Final Rejection in Section 5, pages 7 to 8 appears to refer to the Schultz reference to support its combination rejections. But, Schultz contains no teaching to combine the desperate Jorgeson sensor coating solution, the Salomaa et al. serial solution device or the Stahli automatic pippetter with the viscous luminescent precursor dispensing art.

II. THE REFERENCES FAIL TO ESTABLISH A PRIMA FACIE CASE OF OBVIOUSNESS

(1) THE REFERENCES DO NOT MAKE OUT A PRIMA FACIE CASE OF A LINEAR DYNAMIC RANGE OF AT LEAST 20 NANO-LITER TO ABOUT 100 MICRO-LITER

Even improperly combined, the references do not make a prima facie case of obviousness of a precursor “displaced within a linear dynamic range of at least 5 nano-liter (now 20 nano-liter to about 100 micro-liter)” (all claims). The October 5 Office Action mentions that Stahli teaches a delivery of “from 0.98 to 1.02 microliters.” However, liner dynamic range is not the same as delivery quantity. Liner dynamic range is an important parameter to delivery of the subject viscous materials; size of droplet (quantity) is not. The references do not teach or suggest a linear dynamic range of 20 nano-liter to about 100 micro-liter

The PTO states that Schultz “shows that volumes as small as applicant has claimed are possible with the various liquid dispensers” (Final Rejection Section 5, page 7). But the PTO does not understand the present invention. The invention is not directed to (and does not claim) “small” “volumes.” The invention claims dispensing viscous luminescent materials in greater (not smaller) than a 20 nano-liter linear dynamic range (not volume). The linear dynamic range is a parameter that is important to dispensing viscose luminescent material precursors (20 nano-liter to about 100 micro-liter). None of the references mention this important parameter and limitation to Applicant’s claims.

The Final Rejection Section 5, page 8 states:

Relative to the linear dynamic range found in the claims, it should be pointed out that examiner was unable to find a definition of the phrase in the specification and Applicant has not provided evidence that the phrase is a term of art known to one of ordinary skill.

The PTO’s attention is respectfully direct to the specification page 6, line 9 where “linear dynamic range” is defined.

Applicant's February 20 Amendment, page 6 argued:

The references do not make out a prima facie case of obviousness of aspirating precursor "within a linear dynamic range of at least 5 nano-liter" (claims 11 to 13). (Now, at least 20 nanoliter (all claims.)) Applicant made this argument in the December 9 Request for Reconsideration. The PTO has not responded. The PTO should respond to this argument in a non-final Office Action or allow the claims.

The Final Rejection states:

As previously pointed out in paper number 7, Schultz does clearly teach the use of positive displacement dispensers in the preparation of combinatorial composition for the broad range of materials covered by the reference. Since the Schultz reference clearly teaches a variety of dispensers are possible, known properties of a pipette type of dispenser such as accurate positioning or known abilities to handle viscose liquids with accuracy and precision would not have come from the teachings of applicant. In particular applicant is referred to the newly cited and applied Jorgensen and Stahli references. Relative to the claimed volumes, Xiang teaches volumes using the inkjet (column 5) of at least between 50 nanoliters to 5 microliters. The range could clearly cover the claimed range since a single drop is smaller than a nanoliter and there appears to be no requirement for the system to stop at 10,000 drops.

Final Rejection Section 5, pages 7 to 8.

First as pointed out above, the claims do not claim "volumes" or "drops." See above. Second, Applicant has carefully examined Xiang et al. The reference contains no teaching of "50 nano-liters to 5 micro-liters linear dynamic range." The PTO is respectfully requested to allow the claims or to withdraw the Final Rejection and to issue another non-final action to point out the purported linear dynamic range "greater than 20 nano-liter to about 100 micro-liter" teaching appears. "[W]hen the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such a teaching or suggestion appears in the reference...." In re Rijckaert, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

(2) THE REFERENCES DO NOT MAKE OUT A PRIMA FACIE CASE OF A PRECURSOR VISCOSITY OF GREATER THAN ABOUT 1 CENTIPOISE

Applicants' February 20 Amendment, page 6 argued:

The references do not make out a prima facie case of obviousness of a precursor viscosity of greater than about 1 centipoise (claims 1, 2, 4 to 6, 8 to 20, 23 and 24). The PTO states "[t]hese two references (Xiang and Stahli) also clearly deal with any issues of viscosity." "[W]hen the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such a teaching or suggestion appears in the reference...." *In re Rijckaert*, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). The PTO fails to point out where any of the alleged Xiang and Stahli precursor viscosity teachings appear in the references. The PTO should respond to this argument in a non-final Office Action or allow the claims.

The Final Rejection Section 5, page 8 states:

From the Jorgensen reference it is clear that delivery of volumes through a pipette (needle) in the nanoliter range is clearly possible. From the Stahli reference it is clear that delivery of fluid at least covering the specific range taught by Xiang is possible with a micropipettor. These two references also clearly deal with any issues of viscosity.

This statement is not responsive to Applicants' argument. "The examiner bears the burden of establishing a prima facie case of obviousness. *In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993); *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). MPEP 2143 states that "[t]o establish a prima facie case of obviousness,... the prior art reference (or references when combined) must teach or suggest all the claim limitations." The references fail to teach or suggest "a precursor viscosity of greater than about 1 centipoise." The PTO states that "[t]hese two references [Jorgeson and Stahli?] also clearly deal with any issues of viscosity. However, the PTO fails to point out where the relevant "precursor viscosity of greater than about 1 centipoise" teachings appear in the references. If the PTO is relying on these references, "then the PTO must indicate where the "teaching or suggestion" appears in the references. *In re Rijckaert*, *supra*.

The Final Rejection also refers to Louderback et al. column 2, lines 36-42.

However, this reference is not applied as of record. If the PTO intends to rely on this reference, it must withdraw the finality of the rejection and issue another office action stating the reference as a basis of rejection and explaining the relevance of its teaching.

Applicant has examined the references and can find no teaching of “a precursor viscosity of greater than about 1 centipoise.” The PTO is respectfully requested to allow the claims or to withdraw the Final Rejection and to issue another non-final action to point out where the alleged “precursor viscosity of greater than about 1 centipoise” teaching appears. *In re Rijckaert, supra*.

(3) THE REFERENCES DO NOT MAKE OUT A PRIMA FACIE CASE OF A FLUID SUSPENSION OF A PARTICLE SIZE OF UP TO ABOUT 50 μ M

Applicant has argued that the references do not make out a prima facie case of obviousness of a fluid suspension of a particle size of up to about 50 μ m (claim 24).

The Final Rejection Section 5, page 8 states:

Relative to a particle suspension see at least Schultz column 26, lines 28-33.

In its entirety, Schultz et al. 5,985,356, column 26, lines 28 to 35 states:

Moreover, an array of zeolites, i.e., hydrated silicates of aluminum and either sodium, calcium or both, can be prepared using the methods of the present invention. To prepare an array of such materials, the reactant components are delivered to predefined regions on a substrate in the form of a slurry. Using a low temperature (e.g., 60.degree. C. to about 70.degree. C.) hydrothermal method, for example, the zeolites will crystallize out of solution.

Applicant fails to understand the relevancy of this teaching to claim 24 “precursors [comprising] a solid in fluid suspension of a particle size of up to about 50 μ m.” Schultz et al. col. 26, lines 26 to 35 does not teach or suggest CHTS luminescence “precursors [comprising] a solid in fluid suspension of a particle size of up to about 50 μ m.” The PTO is respectfully requested to allow claim 26 or to withdraw the Final Rejection and to issue another non-final action to point out where the alleged

“precursors [comprising] a solid in fluid suspension of a particle size of up to about 50 μ m” teaching appears. *See In re Rijckaert, supra.*

(4) THE REFERENCES DO NOT MAKE OUT A PRIMA FACIE CASE OF OBVIOUSNESS OF A CHTS METHOD COMPRISING “(B) REITERATING (A) WHEREIN A SUCCESSIVE CANDIDATE LUMINESCENCE MATERIAL PRECURSOR FOR A STEP (I) IS SELECTED AS A RESULT OF AN EVALUATING STEP (III) OF A PRECEDING ITERATION OF (A)”

Applicants’ February 20, 2003 Amendment argued that the references do not make out a prima facie case of obviousness of a CHTS method comprising “(B) reiterating (A) wherein a successive candidate luminescence material precursor for a step (i) is selected as a result of an evaluating step (iii) of a preceding iteration of (A)” (claim 26). Applicants also made this argument in the December 9 Request for Reconsideration.

The Final Rejection fails to respond to this argument. This is improper examination. The rejection of claim 26 must be withdrawn.

(5) THE REFERENCES DO NOT MAKE OUT A PRIMA FACIE CASE OF OBVIOUSNESS OF AN ASSEMBLY INCLUDING A FURNACE AND AN EVALUATOR

The references do not make out a prima facie case of obviousness of an assembly including a furnace and an evaluator (claim 34).

The Final Rejection fails to respond to this argument. This is improper examination. The rejection of claim 34 must be withdrawn.

III. IMPROPER FINAL REJECTION

The PTO has failed to address the *In re Lee* findings and logic to combine requirements and the PTO has failed to address or fully address (1) a precursor “displaced within a linear dynamic range of at least 5 nano-liter (now 20 nanoliter to about 100 micro-liter)” (all claims), (2) a precursor viscosity of greater than about 1 centipoise, (3) a fluid suspension of a particle size of up to about 50 μ m, (4) a CHTS method comprising “(B) reiterating (A) wherein a successive candidate luminescence material precursor for a

step (i) is selected as a result of an evaluating step (iii) of a preceding iteration of (A)” or (5) an assembly including a furnace and an evaluator.²

MPEP 707.07, entitled “Completeness and Clarity of Examiner’s Action,” provides that “[t]he examiner must address all arguments which have not already been responded to in the statement of the rejection” and MPEP 707.07(f) entitled “Answer All Material Traversed” states “Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it.” Applicant’s arguments have not been addressed. Applicant respectfully requests the PTO to withdraw the present Final Rejection and allow the claims or issue a non-final office action addressing Applicant’s reason to combine and (1) to (5) arguments.

In the alternative, in accordance with MPEP 713.01, Applicant hereby requests an examiner interview with the Examiner and the Supervisory Primary Examiner prior to the next office action (1) to explain the PTO’s reasoning to combine the references and (2) to clearly identify the disclosure that the PTO relies on for teachings of (1) a precursor “displaced within a linear dynamic range of at least 5 nano-liter (now 20 nanoliter to about 100 micro-liter)” (all claims), (2) a precursor viscosity of greater than about 1 centipoise, (3) a fluid suspension of a particle size of up to about 50µm, (4) a CHTS method comprising “(B) reiterating (A) wherein a successive candidate luminescence material precursor for a step (i) is selected as a result of an evaluating step (iii) of a preceding iteration of (A)” and (5) an assembly including a furnace and an evaluator.

V. CONCLUSION

The Final Rejection queried as to the novelty of the present invention over the disclosure of the Sun MRS Bulletin article. Novelty of the present invention is defined in the claims.

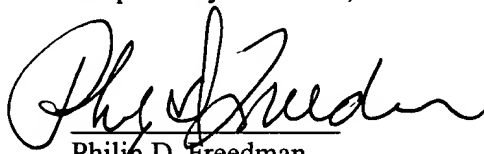
The above amendments only incorporate dependent claims into independent claims. They add no new issues. The amendments place the application in better

² Additionally, the PTO has not addressed claims 9, 10, 13, to 16, 26, 30 and 33

condition for allowance. The Final Rejection is an improper final action and should be withdrawn. Thus, entry of the amendments is requested under 37 CFR §1.116. In view of the foregoing amendments and remarks, reconsideration and allowance of claims 1, 2, 4 to 6, 9 to 10, 13 to 20, 23 to 30 and 33 to 34 are respectfully requested.

Should the Examiner believe that any further action is necessary in order to place this application in condition for allowance, he is requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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